WHAT IS CLAIMED IS:

1. An apparatus for embedding a digital watermark in a document image, comprising:

outer shape extraction means for extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image; and

control means for controlling at least one of the outer shapes so that a parameter between the first and the second outer shapes and a parameter between the third and the fourth outer shapes are to be different each other in correspondence with digital watermark information to be embedded.

2. The apparatus according to claim 1, wherein said control means changes at least one of positions of the first to fourth outer shapes.

3. The apparatus according to claim 1, wherein said control means changes at least one of sizes of the first to fourth outer shapes.

4. The apparatus according to claim 1, wherein the second and fourth outer shapes are outer shapes at an identical position.

5. The apparatus according to claim 4, wherein a set of the first and second outer shapes is spaced a distance corresponding to a predetermined number of outer shapes from a set of the third and fourth outer shapes.

6. An apparatus for extracting data embedded in a document image, comprising:

outer shape extraction means for extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image; and

extraction means for comparing a parameter between the first and the second outer shapes with a parameter between the third and the fourth outer shapes, and extracting data corresponding to a comparison result of the parameters as data embedded in the document image.

7. A method for embedding a digital watermark in a document image, comprising:

an outer shape extraction step of extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line

different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image; and

a control step of controlling at least one of the outer shapes so that a parameter between the first and the second outer shapes and a parameter between the third and the fourth outer shapes are to be different each other in correspondence with digital watermark information to be embedded.

8. A method for extracting data embedded in a document image, comprising:

an outer shape extraction step of extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image; and

an extraction step of comparing a parameter between the first and the second outer shapes with a parameter between the third and the fourth outer shapes, and extracting data corresponding to a comparison result of the parameters as data embedded in the document image.

9. A program for making a computer execute a digital watermark embedding method of claim 7.

10. A program for making a computer execute a digital watermark extraction method of claim 8.

11. A computer readable storage medium storing a program of claim 9.

12. A computer readable storage medium storing a program of claim 10.